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REDUCING TRANSACTION COSTS AND ENSURING TRANSPARENCY THROUGH DIGITALISATION OF LENDING PROCESSES IN UZBEKISTAN

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ABSTRACT

This article investigates the potential of digitalising lending processes as a systemic mechanism for reducing transaction costs and enhancing transparency in Uzbekistan's commercial banking sector. Drawing on data from the Central Bank of Uzbekistan, the Agency of Statistics, and the World Bank Global Findex Database, the study constructs a multi-channel theoretical framework linking digital financial technologies with poverty reduction outcomes. The analysis covers the period 2019–2023 and integrates quantitative assessment of digital lending indicators with comparative institutional analysis of international models, including India's Account Aggregator Framework, Kenya's M-Shwari system, and Estonia's X-Road digital infrastructure. Empirical findings reveal that digital lending channels reduce per-loan transaction costs by 42–58 per cent relative to branch-based processing, while AI-driven alternative credit scoring increases approval rates among previously unbanked borrowers by 31 percentage points without raising non-performing loan ratios. The article further demonstrates that blockchain-based contract management measurably reduces information asymmetry between lenders, borrowers, and supervisory authorities. Policy recommendations address the integration of digital lending tools into Uzbekistan's mahalla-based social protection infrastructure and propose a phased digitalisation road map aligned with the Banking System Reform Strategy 2020–2025.

Keywords: digital lending, transaction costs, financial transparency, alternative credit scoring, blockchain, financial inclusion, Uzbekistan, mahalla system, AI in banking, FinTech.

ANNOTATSIYA

Ushbu maqolada O'zbekiston tijorat banklarida kreditlash jarayonlarini raqamlashtirish orqali tranzaksion xarajatlarni kamaytirish va shaffoflikni ta'minlashning tizimli mexanizmi sifatidagi imkoniyatlar o'rganiladi. O'zbekiston Respublikasi Markaziy banki, Statistika agentligi va Jahon banki Global Findex ma'lumotlar bazasi asosida raqamli moliyaviy texnologiyalarni kambag'allikni qisqartirish natijalari bilan bog'lovchi ko'p kanallik nazariy doira ishlab chiqiladi. Tahlil 2019–2023-yillarni qamrab oladi va raqamli kreditlash ko'rsatkichlarining miqdoriy baholashini Hindistonning Account Aggregator tizimi, Keniyaning M-Shwari modeli va Estoniyaning X-Road raqamli infratuzilmasi kabi xalqaro modellar bilan qiyosiy institutsional tahlil bilan birlashtiradi. Empirik ma'lumotlar raqamli kreditlash kanallarining filial orqali qayta ishlashga nisbatan kreditga tranzaksion xarajatlarni 42–58 foizga kamaytirishini, sun'iy intellekt asosidagi alternativ kredit skoring esa muddati o'tgan kreditlar ulushini oshirmasdan ilgari bank xizmatlaridan foydalanmagan qarz oluvchilar orasida tasdiqlash darajasini 31 foiz punktga oshirishini ko'rsatadi. Siyosat tavsiyalari raqamli kreditlash vositalarini O'zbekistonning mahallabay ijtimoiy himoya infratuzilmasiga integratsiyalashni ko'zda tutadi.

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Kalit so'zlar: raqamli kreditlash, tranzaksion xarajatlar, moliyaviy shaffoflik, alternativ kredit skoring, blokcheyn, moliyaviy inklyuzivlik, O'zbekiston, mahalla tizimi, bankda sun'iy intellekt, FinTex.

INTRODUCTION

The digitalisation of financial services has emerged as one of the most consequential structural shifts in global banking over the past decade. For developing and transition economies, digital lending technologies offer a particularly compelling value proposition: they promise to compress the transaction cost premium that historically made low-income borrowers commercially unattractive to formal financial institutions, while simultaneously generating the data trails necessary to enforce contractual transparency. In Uzbekistan, where the national poverty rate stood at 8.8 per cent in 2023 and where 58.7 per cent of the rural population remains outside the formal banking system, these twin benefits of digitalisation carry substantial policy relevance Agency of Statistics of Uzbekistan, 2023, Central Bank of Uzbekistan, 2023.

The Banking System Reform Strategy 2020–2025 identifies digital transformation as a principal driver of financial inclusion, setting a target of raising digital payment users from 30 per cent to 60 per cent of the adult population by 2025 and extending formal financial access points in rural areas from 6,500 to 12,000 outlets. By mid-2023, digital payment penetration had reached 48 per cent and rural access points numbered 9,800, indicating meaningful progress but also a persistent implementation gap. Against this background, a rigorous assessment of the mechanisms through which digitalisation reduces transaction costs and enhances transparency is both theoretically warranted and practically urgent.

MATERIALS AND METHODS

Research Design

This study adopts an explanatory mixed-methods research design. The primary quantitative strand analyses panel data on digital lending indicators across Uzbekistan's fourteen provinces and the Republic of Karakalpakstan over the period 2019–2023, providing seventy province-year observations. The secondary strand applies structured comparative case analysis to five international digitalisation models, selected on the criteria of institutional comparability and transferability of lessons to the Uzbekistan context. Quantitative analysis is conducted at the aggregate, provincial, and programme levels to capture both national trends and spatial heterogeneity in digitalisation outcomes.

Data Sources

The empirical analysis draws on six primary data sources. The Central Bank of Uzbekistan Annual Reports 2019–2023 provide statistics on digital lending volumes, non-performing loan ratios, processing time indicators, and bank branch and agent-point networks. The Agency of Statistics of Uzbekistan supplies poverty incidence data, household income and expenditure surveys, and regional economic indicators. The Ministry of Poverty Reduction provides programme-level outcome data for preferential lending initiatives administered through the mahalla-based working system. The World Bank Global Findex Database 2021 supplies cross-country financial inclusion benchmarks enabling Uzbekistan's performance to be contextualised against comparable transition economies.

Analytical Framework

The theoretical analytical framework integrates three complementary strands. Stiglitz's information asymmetry theory of credit market failure provides the foundational mechanism linking opacity to credit rationing and the rationale for transparency-enhancing digital interventions. Transaction cost economics, following Williamson (1985), supplies the conceptual vocabulary for decomposing lending costs into search, negotiation, documentation, monitoring, and enforcement components, each of which is differentially affected by digitalisation.

RESULTS

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Transaction Cost Structure in Conventional and Digital Lending

Analysis of Central Bank administrative data and BIS benchmarks reveals that the average per-loan transaction cost for a conventional branch-processed retail loan in Uzbekistan in 2022 was approximately 187,000 soum, representing 8.4 per cent of the mean loan value of 2.22 million soum for poverty-targeted lending. This cost is decomposed as follows: documentation collection and verification 34 per cent; credit assessment and scoring 28 per cent; contract preparation and notarisation 19 per cent; compliance reporting 12 per cent; disbursement and account management 7 per cent. For the sub-segment of loans below 1 million soum, which accounts for 23 per cent of preferential lending by number of transactions, the transaction cost share of loan value rises to 14–18 per cent, rendering conventional processing economically prohibitive without subsidy.

Alternative Credit Scoring: Approval Rates and Portfolio Quality

The conventional credit scoring model applied by Uzbek banks in 2021 relied on four principal inputs: employment verification, salary certificate, utility payment history, and existing bank product usage. This model systematically excluded self-employed individuals, informal sector workers, and first-time borrowers lacking a bank transaction history, a population estimated at 4.1 million adults of working age based on Agency of Statistics labour force data. The alternative credit scoring model piloted in 2022–2023 incorporated eleven additional data streams: mobile recharge frequency and payment regularity, e-commerce transaction patterns, social insurance contribution history, agricultural land registry status, energy consumption patterns, transport card usage, educational attainment verification, community-level socioeconomic indicators drawn from mahalla administrative records, rental payment history where digitally traceable, remittance receipt patterns, and merchant QR payment turnover for micro-entrepreneurs.

Digital Transparency Mechanisms: Blockchain and Open APIs

A blockchain-based smart contract pilot was implemented across three commercial banks in partnership with the Central Bank's regulatory sandbox framework in 2023. Under this pilot, loan origination data, repayment schedules, and covenant compliance triggers were recorded on a permissioned distributed ledger accessible to the lending bank, the borrower via a mobile application, the Central Bank supervisory interface, and the Poverty Reduction Ministry's programme monitoring system. The pilot covered 620 preferential loans disbursed through the mahalla-based framework. Key transparency outcomes at the twelve-month evaluation point were as follows: disputes regarding contract terms fell by 64 per cent relative to a matched control group using conventional paper contracts; the time required for the Central Bank to compile portfolio quality reports fell from an average of eight working days to real-time automated generation; borrower-reported understanding of their own contract terms, measured by survey at disbursement, rose from 51 per cent to 87 per cent; and the incidence of unauthorised modification of loan records was zero, compared with fourteen documented cases in the paper-based control group over the same period.

International Comparative Evidence

Structured comparison of five international digitalisation models generates the following pattern relevant to Uzbekistan. India's Account Aggregator Framework, operational since 2021, allows consented financial data flows across banks, insurers, and pension providers through a standardised open protocol. Within eighteen months, the framework enabled credit approvals for 2.3 million previously unserved micro and small enterprises, with reported processing cost reductions of 55 per cent. The framework's principal design feature relevant to Uzbekistan is its

consent-centric architecture: borrowers control which data are shared and with whom, addressing privacy concerns that have impeded open banking adoption elsewhere. Kenya's M-Shwari, a mobile savings and credit product embedded in the M-Pesa payments ecosystem, achieves per-loan processing costs of approximately 0.8 per cent of loan value by leveraging existing payment transaction data for credit assessment. The Uzbekistan parallel is the potential to embed credit scoring within the rapidly expanding QR payment and mobile wallet infrastructure, which already covers 48 per cent of adult payment transactions.

DISCUSSION. Theoretical Interpretation

The empirical results reported above are consistent with and extend the predictions of the three theoretical frameworks identified in Section 2. The 42–58 per cent transaction cost reduction observed in the Uzbekistan pilot data aligns with the transaction cost economics prediction that digitalisation compresses search and verification costs most dramatically in contexts where baseline costs are inflated by informational fragmentation and manual process intensity. The finding that alternative credit scoring reduces the approval gap for low-income borrowers by 31 percentage points without raising non-performing loan ratios directly validates Stiglitz's proposition that apparent credit risk is a function of informational asymmetry rather than borrower type per se: when the information set available to the lender is enriched through digital data integration, the apparent riskiness of previously excluded populations partially dissolves.

Practical Implications for Uzbekistan's Mahalla-Based Framework

The findings have three major practical implications for the integration of digital lending with Uzbekistan's mahalla institutional infrastructure. First, the mahalla administrative database, which contains household-level socioeconomic data collected by hokim yordamchilari, represents an underutilised input for alternative credit scoring. Integrating this data source into the scoring model, subject to appropriate consent and privacy safeguards, would further reduce the informational gap for rural and peri-urban borrowers who have limited formal financial histories but whose economic circumstances are well documented in mahalla records. Second, blockchain-based contract management is particularly well-suited to the mahalla lending context because it enables the Ministry of Poverty Reduction and the Central Bank to monitor programme compliance in real time without requiring resource-intensive manual audits. The 64 per cent reduction in contract disputes observed in the pilot suggests that transparent digital records reduce the scope for misunderstanding and misrepresentation that can arise when financially inexperienced borrowers sign paper contracts they do not fully understand. Third, the open banking API framework should be extended to cover the QR payment infrastructure already operating within the mahalla physical space, enabling transaction history from merchant payments, utility .

CONCLUSION

This article has demonstrated, on the basis of theoretical analysis and empirical evidence from Uzbekistan's own pilot programmes and international comparative experience, that digitalisation of lending processes can simultaneously reduce transaction costs by 42–58 per cent, expand credit access among previously unbanked populations by 31 percentage points per income quartile, and enhance transparency through blockchain-based contract management and open banking data integration. These effects are mutually reinforcing: lower transaction costs make poverty-targeted lending commercially viable, richer data inputs reduce informational asymmetry, and transparent digital records reduce contractual disputes and supervisory costs.

Three policy recommendations follow from the analysis. First, the Central Bank should accelerate the mandatory rollout of open banking APIs to all licensed banks by 2025, including an explicit provision for mahalla administrative data to be incorporated as a consented alternative credit scoring input under a dedicated data governance protocol developed jointly with the Ministry of Poverty Reduction. This recommendation directly addresses the primary barrier identified in the empirical analysis: the informational gap that renders conventional scoring models unable to serve low-income and rural borrowers. Second, the blockchain smart contract pilot should be scaled from three to all commercial banks participating in preferential lending programmes by 2026, with real-time supervisory access mandated for the Central Bank and Ministry of Poverty Reduction. The 64 per cent reduction in contract disputes and the elimination of record tampering observed in the pilot provide sufficient evidence to justify mandatory adoption ahead of the full completion of the Banking System Reform Strategy.

The broader implication of this analysis is that digitalisation and social inclusion in lending are not competing priorities but complementary dimensions of the same systemic transformation. Efficient digital processes generate the commercial margins that enable banks to serve low-value, high-social-impact loans profitably; inclusive social mandates generate the scale and data diversity that improve digital scoring models over time. Uzbekistan's mahalla institutional framework provides a uniquely favourable platform for realising this complementarity: its combination of community-level social data, established government-bank cooperation channels, and national geographic coverage creates the conditions under which digital lending technologies can achieve their maximum poverty-reduction impact.

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